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REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN	**§**	**PUBLIC UTILITY COMMISSION OF TEXAS**

NRG ENERGY, INC.'S COMMENTS ON THE COMMISSION'S SEPTEMBER 2, 2021 QUESTIONS FOR COMMENT

NRG Energy, Inc. (NRG) appreciates the opportunity to provide feedback on the demand response (DR) questions filed by the Public Utility Commission of Texas (Commission) on September 2, 2021. Expanding and enhancing DR programs to achieve greater participation, especially by residential customers, is important for the future of the Texas electric market. Included as Attachment A to these comments is an Executive Summary of NRG's recommendations.

1. *Describe existing and potential mechanisms for residential demand response in the ERCOT market. (Subparts omitted.)*

Residential customers are compensated for their demand response. Forms of compensation include bill credits and rebates. NRG has been offering DR programs for residential consumers for over 9 years and is constantly improving product design to appeal to customers. Of approximately 6.7 million residential customers in retail competition in ERCOT, less than 12 percent are enrolled in retail demand response products.[1] Clearly, substantial demand reduction potential remains untapped in this customer segment.

Residential DR does not participate on equal footing with large commercial and industrial (C&I) DR because additional forms of compensation are available to C&I DR including avoided transmission costs, seasonal capacity payments (both through Emergency Response Service[2] and Transmission and Distribution Utility Load Management Programs), and ancillary-services revenue.

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[1] *See* ERCOT Counts of Profile Type Assignments by Weather Zone, Meter Data Type, & TDSP (June 2021) available at: http://www.ercot.com/content/wcm/key_documents_lists/89221/Profile_Type_Counts.zip; *See* 2020 Annual Report on Demand Response in the ERCOT Region at 16 (Dec. 2020) (available at: http://mis.ercot.com/misapp/GetReports.do?reportTypeId=13244&reportTitle=Annual%20Report%20on%20ERCOT%20Demand%20Response&showHTMLView=&mimicKey).

[2] A limited availability for weather-sensitive ERS is available to residential DR, but it has in practice been underutilized because the process of subscribing large numbers of residential sites can be complex and cumbersome. Any expansion of ERS should be focused on the residential customer class and should work to simplify participation.

Essentially the only source of market-based compensation for residential DR is avoided energy costs, which can be substantial, but also unpredictable and infrequent. These same features of the energy-only market design that make investment in generation resources challenging also pose issues for investment in residential DR programs. Residential customers look for a stable bill credit of more than just a nominal amount to become interested. Extending the Operating Reserve Demand Curve (ORDC) to provide a higher frequency of prices that would encourage customers to curtail could help with predictability and allow for adoption of programs that attract more participation.

To illustrate the potential capabilities of the residential class, if a REP can reduce a residential customers' usage by 20-30% during a particularly hot day, that would equate to about 1 kwh during a peak hour per customer.[3] The volume and value of the energy reduction must be commensurate with the costs a REP would incur to hedge that volume in the bilateral market and the fixed cost investment on any smart devices offered by the REP. Meanwhile, if one assumes the load reduction occurs during the four summer coincident-peak (4CP) hours, additional value could be captured through avoided transmission costs—but only for those load-serving entities (LSE) and customers that are billed on a demand basis for transmission charges. REPs and their residential customers are not able to capture this value currently due to the present state of rate design.[4]

To predictably obtain demand response from residential customers, fixed-cost investments must be made.[5] A smart thermostat costs between $100-200. Comparing the savings from avoided energy cost to only the fixed cost of investment (before the cost of a rebate to customers or the cost of administering such a program), it likely would take more than a year to have a reasonable opportunity to recover the fixed cost for an average customer, again assuming the status quo where

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[3] 2021 ERCOT System Planning Long-Term Hourly Peak Demand and Energy Forecast at 15 (Jan. 8, 2021) (available at: http://www.ercot.com/content/wcm/lists/219761/2021_LTLF_Report.pdf).

[4] Transmission costs are billed on a year-round, kwh-basis for residential customers in competitive territories, and this charge is directly passed through on customers' bills. While this is a simple rate design that obviates the need for REPs to build transmission costs into a retail price offer, it also means that there is no significant benefit in avoided transmission costs that a REP and its residential customers can capture from residential demand reductions.

[5] In NRG's experience, a smart thermostat that automatically reduces load at peak time, subject to customer override, delivers about 10x the demand reduction than an approach that involves informing the customer of a peak and asking the customer to reduce his usage manually. The implementation of advanced metering systems (AMS) allows REPs to measure curtailment and compensate customers for it.

benefits are limited to avoided energy costs. Additionally, the investment could become stranded for a REP, since a customer may switch away to a different REP.[6] NRG recommends changes to the Commission's energy efficiency programs to direct more funding through REPs to smart thermostat investments for residential customers as explained in the response to Question 3.

2. *What market design elements are required to ensure reliability of residential demand response programs? (Subparts omitted.)*

An LSE should be expected to integrate demand-response opportunities into its business plan to serve its customers' demand and bolster reliability. NRG supports the establishment of a reliability standard and adoption of an LSE Reliability Obligation,[7] a component part of which would be crediting the LSE's curtailable loads. That demand responsiveness should be integrated into both ERCOT long-term and system-operations planning using a conservative estimate of demand reduction.

Additionally, DR programs targeting reduction of electric-heat load should be a focus for the Commission. A blunt approach may be needed in extreme circumstances, which would rely on cycling residential electric-heat loads. Electric-heat loads are separately classified by customer class—residential high-winter-ratio customers, in ERCOT terminology. These customers are likely to experience the kind of extraordinary increase in residential electric load shown in Attachment B during severe winter weather. That analysis demonstrates residential customers with electric heat during Winter Storm Uri used *nearly double* the electricity those same customers, with air conditioning, would use during a 100-degree day.

TDUs should be required to utilize the consumer-funded investments in advanced meter technology by developing plans to temporarily interrupt customers on a 30-minute or hourly basis during EEA3 conditions, preserving adequate heat in emergencies while managing the emergency load conditions. A command-and-control approach to the cycling of electric-heat loads may better meet the load shed requirements during EEA3.

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[6] As described in response to Question 3, subsidizing fixed-cost investments like smart thermostats through existing money allocated to Energy Efficiency Transmission Distribution Utilities (TDU) spending would mitigate this potential stranded-cost issue.

[7] This recommendation will be fully detailed in a report targeted for publication later this month, authored by the consulting firm Energy and Environmental Economics and Beth Garza, former ERCOT independent market monitor and senior fellow, R Street Institute.

3. *How should utilities' existing programs, such as those designed pursuant to 16 TAC §25.181, be modified to provide additional reliability benefits? (Subpart omitted.)*

As described in NRG's previous comments, the ERCOT TDUs expend significant resources each year to satisfy their statutory obligation under PURA § 39.905 to achieve certain minimum energy savings goals.[8] Dedicating a greater portion of the TDUs' annual energy efficiency funding to REP programs for residential DR would better focus the program on load reductions that directly benefit the reliability of the ERCOT system. Using the TDU programs to fund fixed-cost investments such as smart thermostats that will remain with the customer regardless of which REP they choose, while leaving REPs to innovate and offer diverse products that utilize these DR features, would encourage greater residential DR in Texas's unique retail electric market. By directing the TDUs to fund such programs through REPs, the REP could pair the device installation with an electric service plan that rewards the customer for demand reduction during times of high prices or grid stress. To eliminate concerns that such efforts would lead to increased TDU rates, the Commission could evaluate which Energy Efficiency programs are underperforming or are targeted to generalized energy savings, rather than peak demand reduction, so that funds could be efficiently reallocated to facilitate REP-offered DR programs, while preventing an increase in the overall TDU Energy Efficiency Programs' spending level.

The Commission should also consider modifying the existing reporting under 16 TAC § 25.183 to make clear what achievements allow for demand response and what the expected reduction in demand would be. This could help to gauge achievements and needed improvements.

4. *Outside of the programs contemplated in Question 3, what business models currently exist that provide residential demand response? (Subparts omitted.)*

Competitive programs through REPs offer the best opportunities for residential demand response growth. Retail competition in the electricity sector allows for innovation and product differentiation that appeals to customers' different wants and needs. The structure of the competitive retail market in ERCOT necessarily involves marketing products and services tailored to customers. NRG has found that confusing products, like the multi-tier time-of-use rates present in many monopoly jurisdictions in the United States, are less likely to attract subscribership than

[8] NRG Energy's Inc.'s Comments on the Commission's August 2, 2021 Questions for Comment. at 8-9 (Aug. 16, 2021).

relatively simple rebates and incentives tied to peak load reductions. NRG is also concerned that duplicating business models by having both a REP and a third-party DR provider interacting with a given residential customer may lead to confusion on the customer's part, and also a lack of coordination in supplying the customer with energy (or reducing that customer's need for energy). Third-party DR providers offer valuable services in the form of technology and capabilities that improve DR response, but NRG encourages the Commission to focus on regulatory reforms to create incentives for REPs to contract with third party DR providers (rather than duplicating customer-facing business models).

5. *What changes should be made to non-residential load-side products, programs, or what programs should be developed to support reliability in the future?*

By far the most economic DR program in ERCOT is the savings that derive from avoiding transmission costs through the 4CP transmission cost allocation methodology. C&I customers and Non-Opt In Entities (NOIEs) are able to avoid substantial transmission costs based on peak load reduction during the summer months. However, times of peak load are increasingly becoming detached from the needs of the ERCOT grid due to the growth in renewables. In other words, the ERCOT grid is tighter when load is high and renewable output is low, not just when load is high anymore. The Commission should modify 4CP to be based on the four *net load peaks* rather than just peak load. In addition, a C&I customer that engages in demand response during the winter receives no transmission cost savings at all because the 4CP mechanism allocates the entirety of the system's costs to peak summer hours. The Commission should consider modifying the mechanism to also include the winter net load peak, but still weighted toward summer months. This would align the transmission ratemaking with potential reliability issues in the wintertime as well.

CONCLUSION

NRG appreciates the Commission's efforts to consider improvements to demand response programs in ERCOT and looks forward to continued work on this important topic.

Respectfully submitted,

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ATTACHMENT A: NRG's EXECUTIVE SUMMARY – PROJECT 52373, SEPT. 9, 2021

NRG commends the Commission for dedicating a work session to this important topic. The competitive retail market of ERCOT is poised to accommodate substantial growth in residential demand response (DR) if the right economic incentives exist for it. Retail competition in the electricity sector allows for innovation and product differentiation that appeals to customers' different wants and needs. The structure of the competitive retail market in ERCOT necessarily involves marketing products and services tailored to retail customers, where DR opportunities lie.

Summary of NRG comments below:

- The primary value of residential DR in the current regulatory environment is avoided energy costs.
    - The volatility and uncertainty of real-time electricity pricing poses the same issues for residential DR that it does for generators.
    - Residential customers look for a stable bill credit of more than just a nominal amount to become interested.
    - Residential DR does not participate on equal footing with large commercial and industrial (C&I) DR because additional forms of compensation are available to C&I DR including avoided transmission costs, seasonal capacity payments (both through Emergency Response Service[9] and Transmission and Distribution Utility Load Management Programs), and ancillary-services revenue.
    - Extending the Operating Reserve Demand Curve (ORDC) to provide a higher frequency of prices that would encourage customers to curtail could help with predictability and allow for adoption of programs that attract more participation.
- A market with active shopping, like ERCOT, creates a stranded-cost risk of in-home devices like smart thermostats, which stay with the customer even as they move to a different REP. Existing Energy Efficiency TDU funding should be used to expand the deployment of residential smart devices in concert with REPs' retail offerings.
- Residential electric-heat customers who remained online during Winter Storm Uri used *nearly double* the electricity they would use with air conditioning during a 100-degree day, as shown in Attachment B. The PUCT should evaluate whether TDUs could develop plans to temporarily interrupt these customers on a 30-minute or hourly basis during EEA3 conditions, preserving adequate heat in emergencies while managing the emergency load conditions.
- Transmission cost allocation should be based on *net* load peaks and also include winter months, which would leverage additional C&I DR in system-critical periods.

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[9] A limited availability for weather-sensitive ERS is available to residential DR, but it has in practice been underutilized because the process of subscribing large numbers of residential sites can be complex and cumbersome. Any expansion of ERS should be focused on the residential customer class and should work to simplify participation.

ATTACHMENT B:

SAMPLE OF 5,000 RESIDENTIAL ELECTRIC-HEAT CUSTOMERS' USAGE DURING WINTER STORM URI COMPARED WITH AVERAGE USAGE, BY TEMPERATURE